



General Certificate of Education  
Advanced Subsidiary Examination  
June 2011

## Biology

## BIO3T/Q11/task

### Unit 3T AS Investigative Skills Assignment Task Sheet

#### The effect of a named environmental variable on leaf size

##### Introduction

The leaves of a particular species of plant vary in size. This variation is caused by both environmental and genetic factors.

You will investigate how one environmental variable affects leaf size.

##### Materials

You are provided with

- random number table or a calculator with random number function
- ruler to measure in millimetres
- two metre rules.

You may ask your teacher for any other apparatus you require.

##### Outline Method

**Read these instructions carefully before you start your investigation.**

Your teacher will tell you

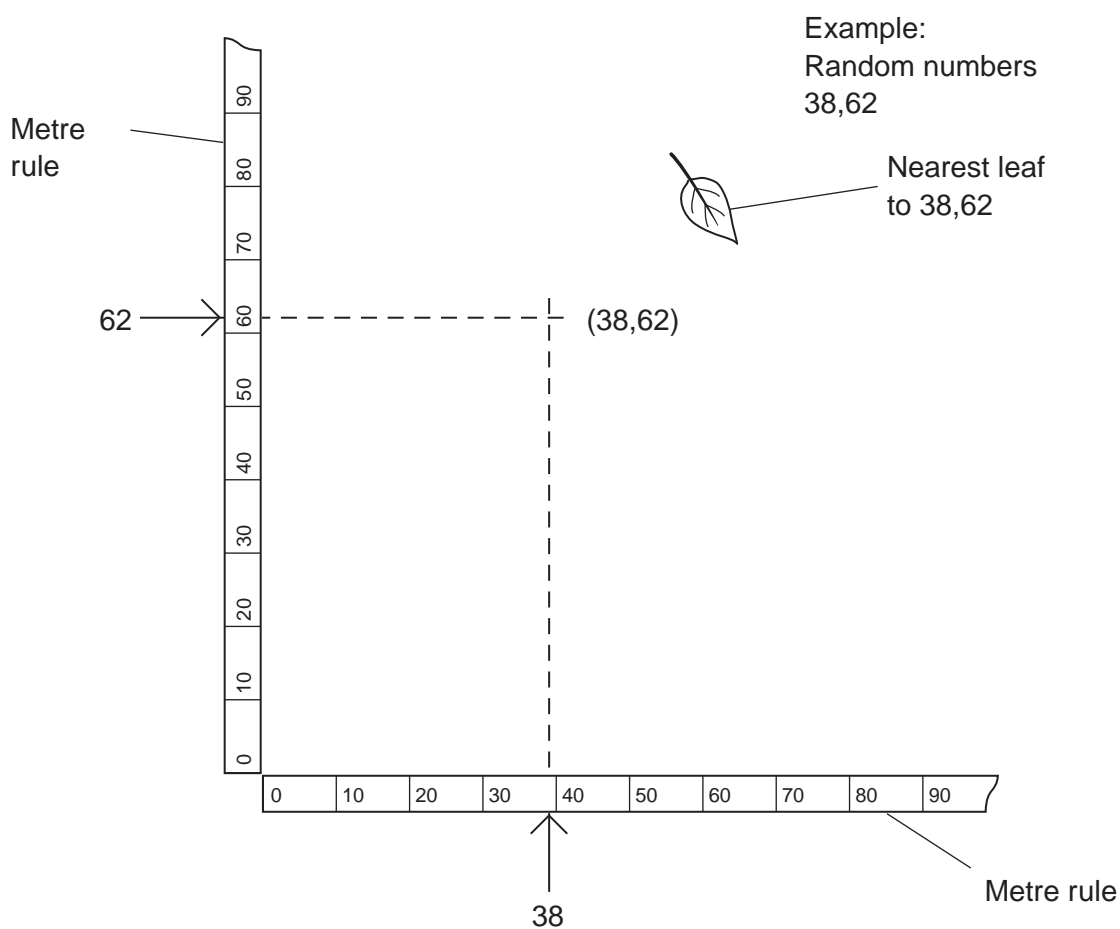
- what environmental variable you will investigate
- from which two sites to take your samples
- which species you will investigate
- how to obtain random numbers.

**At site A**

1. Place the two metre rules at right angles to each other to represent x and y axes.
2. Use the random number tables or calculator to generate two random numbers.
3. Use this pair of random numbers to identify which leaf to measure. Use the first number as the x-axis coordinate (in centimetres) and the second number as the y-axis coordinate (in centimetres). Measure the length of the leaf closest to the random number coordinates. This is shown below.
4. Repeat steps 2 and 3 until you have a sufficiently large sample.

**At site B**

5. Repeat steps 1 to 4 at site B.

**You will need to decide for yourself**

- what sample size to use.

**ISA BIO3T/Q11 Candidate Results Sheet: Stage 1**

The effect of a named environmental variable on leaf size

Centre Number 

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Candidate Number 

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Candidate Name .....

Record your measurements in a table in the space below. (3 marks)

Hand in this sheet at the end of each practical session.

Environmental variable investigated .....

**Turn over ►**

**ISA BIO3T/Q11 Candidate Results Sheet: Stage 2**

The effect of a named environmental variable on leaf size

Centre Number

Candidate Number

Candidate Name.....

Hand in this sheet at the end of the practical session.

You will use your raw data in two ways.

1. Calculate the mean and standard deviation for each set of results.

Site	Mean	Standard deviation
<b>A</b>		
<b>B</b>		

2. Construct a frequency table from your measurements.  
Use this frequency table to plot two graphs of leaf size. These graphs should be plotted so that you can compare the two sets of data.

(9 marks)

